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ARMY CONCEPT TEAM IN VIETNAM
APO San Francisco 96243

ACTIV-GCD

20 December 1966

SUBJECT: Final Report of Chemiluminescent Hand Grenade (U) (ACG-20/67)

TO: Commanding General
United States Army, Vietnam
ATTN: AVHGC
APO San Francisco 96307

1. (U) REFERENCE

Message, COMUSMACV 20975, 19 June 1966, subject: Chemiluminescent Marker Rounds.

2. (U) PURPOSE

Determine if the Chemiluminescent Grenade, with fuze M217, is an effective aid in providing control for night attacks by marking targets, coordination points, axis of advance, objectives, landing and drop zones.

3. (U) BACKGROUND

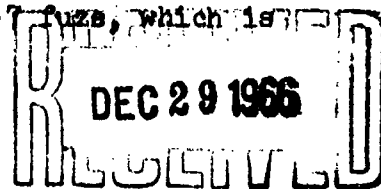
a. Above reference was an ENSURE request for a marker round to be used in conjunction with the Low Light Level Television (LLTV) evaluation. The rounds were to be used primarily by LLTV aircraft for marking targets, with a secondary application for gunship platoon leaders to mark targets.

b. Through informal coordination by the LWL liaison officer and the ACTIV project officer, it was determined that the evaluation should be expanded as outlined in paragraph 2 above. This determination was based primarily on interest expressed by tactical units in a marker round of this type.

4. (C) DISCUSSION

a. The chemiluminescent hand grenade is a 3-inch neoprene sphere with a tubular neck which accommodates a plastic fuze adapter. It is designed to be non-lethal. The only metal parts are the fuze and the fuze clamp. The filling consists of encapsulated chemiluminescent (PR-155). Functioning is with the standard M217 fuze, which is

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an impact fuze with an approximate 4-second over-riding self-destruction feature. The weight of the grenade with fuze is approximately 0.7 pounds. The grenade was intended to fulfill the requirements of producing a pattern of light on the ground approximately 20 feet in diameter for about 30 minutes, being visible from a slant range of 1 mile at altitudes of 500 to 1000 feet (line of sight observation on a clear dark night), and being usable on all types of terrain, including undated areas.

b. The LLLTV team and the 1st Infantry Division participated in the evaluation. The LLLTV team received 45 grenades and the 1st Infantry Division 120. All grenades were expended. Terrain sites included wet ground, water, and heavy foliage areas. Light conditions ranged from daylight to varying degrees of moonlight (1/4 to full moon with cloud cover from scattered to broken).

c. During daylight, the round could be seen from 1/4 to 1/2 miles slant range at altitudes of 500 to 1500 feet, with a visible burning time of 15 to 30 seconds. At night, it was visible from 1/2 to 3/4 miles slant range at these altitudes. The observation time varied from 1 to 5 minutes with an average of about 3 minutes.

d. When employed from the ground, the M217 fuze caused the grenade to burst on impact. In marking a location from an aircraft, the 4-second over-ride feature caused airbursts with resultant burn-out before the marker could be seen on target and any action taken. Over-all failure rate was from 10 to 25 percent.

e. On very wet terrain or water, the light emitted was more diffused and not as intense as on dry land. The particles appeared to float apart. The grenades floated for the duration of the burning time.

5. (C) FINDINGS

a. The duration and intensity of the light emitted were insufficient to permit use of the chemiluminescent grenade as a marker round.

b. The fuze employed with its over-ride self-destruction feature was not satisfactory when employing the marker round from an aircraft.

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c. A valid field requirement still exists for a marker round of this type with an approximate 30-minute duration of luminescence.

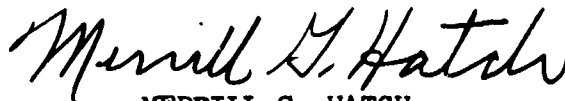
6. (U) CONCLUSION

The chemiluminescent marker grenade with M217 fuze is not suitable for use as a marker round.

7. (U) RECOMMENDATIONS

a. The chemiluminescent grenade and fuze evaluated should not be procured for use in Vietnam.

b. Continued effort should be expended to develop a round with the characteristics outlined in paragraph 4a.



MERRILL G. HATCH
Colonel, Artillery
Chief

1 Incl
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